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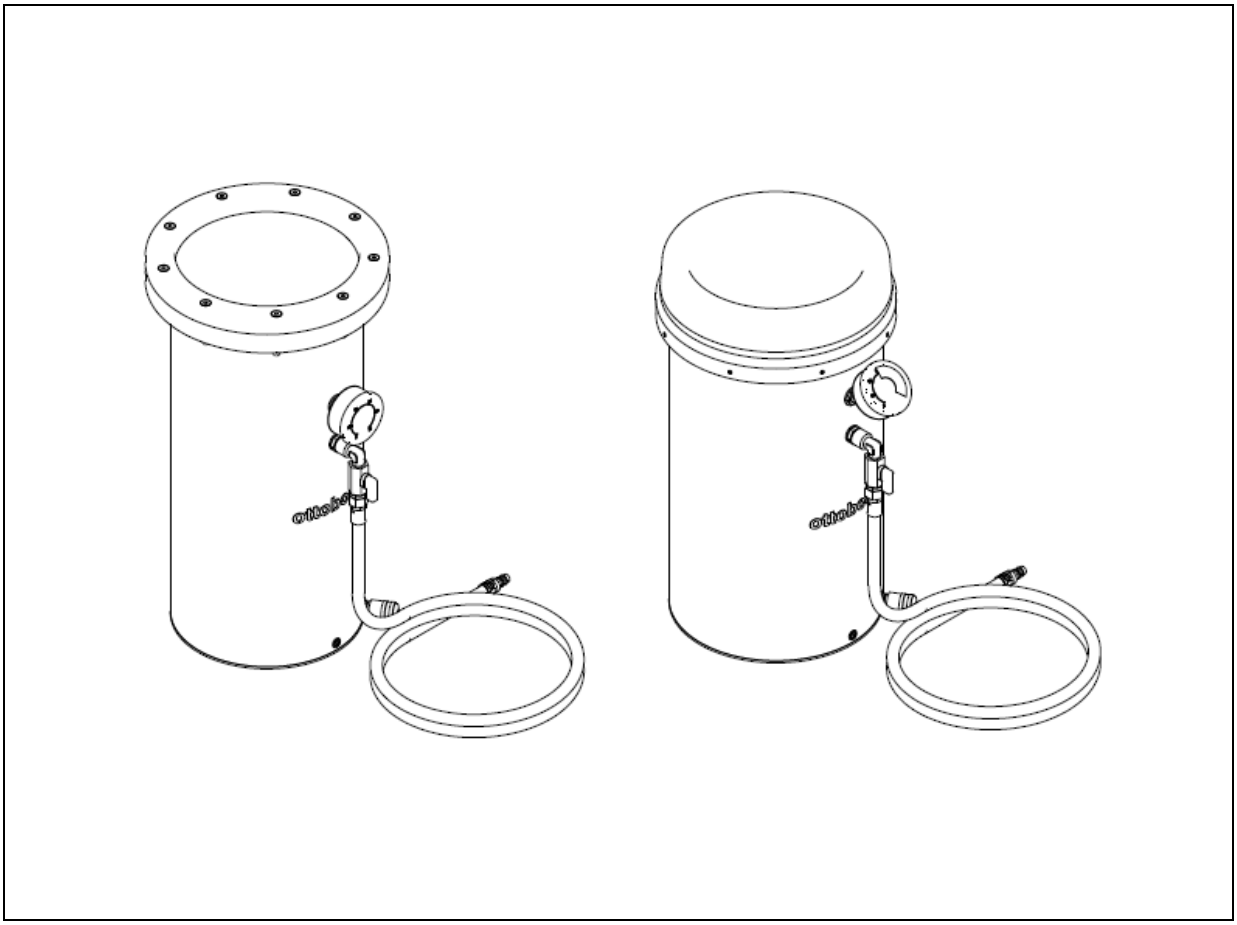

Original operating instructions

hydronetic flex TT

hydronetic flex TF

743G16=1

743G16=2

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RU - Версии на других языках можно скачать по ссылке: www.pe.ottobock.com/downloadcenter

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Table of contents

1. Important information on this document **4**
   1.1 Scope of the document 5
   1.2 Document release date 5
   1.3 Information on the original operating instructions 5
2. Product description **6**
   2.1 Intended use 6
   2.2 Improper use 6
   2.3 Product overview 7
   2.4 Operating elements 8
3. Transport **9**
4. Storage **9**
5. Unpacking **10**
   5.1 Checking the delivered items 10
6. Connecting the product **13**
   6.1 hydronetic flex TT 13
   6.2 hydronetic flex TF 14
   6.3 Venting 15
7. Technical data **16**
8. Use **17**
   8.1 Required materials 17
   8.2 Adjusting the system height 18
   8.3 Assembling the vector tower 19
      8.3.1 Distal receiver 19
      8.3.2 Distal padding 19
      8.3.3 Height of vector tower 20
   8.4 Greasing the membrane 21
   8.5 Determining pressure 22
   8.6 Plaster cast 24
   8.7 System emptying and cleaning 26
9. Maintenance tasks on the product **27**
10. Component list **27**
11. Malfunctions and maintenance **28**
   11.1 Malfunctions 28
   11.2 Maintenance 28
      11.2.1 Replacing the membrane of the Flex TT 29
      11.2.1 Replacing the Flex TF membrane 32

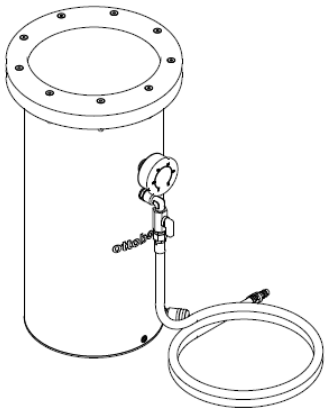
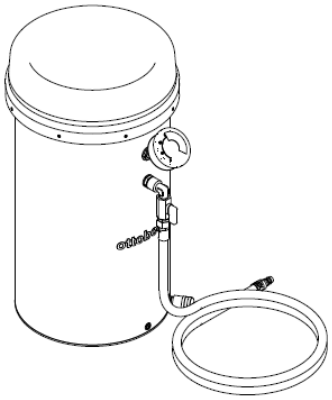
12. Pictograms used **35**
12.1 Warning symbols 35
12.2 Mandatory symbols 35
12.3 Prohibition symbols 35
12.4 Pictograms for transport and storage 36
Notes **37**
Notes **38**
Notes **39**

1. Important information on this document

	WARNING Working with this product without following the operating instructions may lead to death or serious injuries through imprudent working methods. ▶ Study the operating instructions if you are to work with this product. ▶ Familiarise yourself with the structure and contents of the operating instructions. For this purpose, read the section "**Scope of the document**". ▶ It is important to go through the **"Product description"** section and the safety notes in sections relating to the work to be performed. ▶ Always keep these operating instructions close to the product.
	The information set out opposite this symbol is intended to prevent serious injuries and/or death; always read this information carefully. The activity is only to be continued if the correct safety precautions have been taken.

1.1 Scope of the document

This document concerns one or more of the following products:

743G16=1 hydronetic flex TT	743G16=2 hydronetic flex TF
	

1.2 Document release date

Approval date [year-month-day]	Version number
2025-12-18	202601

1.3 Information on the original operating instructions

These operating instructions were originally created in Dutch. Operating instructions in any other language are a translation of the original version.

2. Product description

2.1 Intended use

WARNING

- Use this product exclusively for the intended use.
- The manufacturer is only liable to the extent that the product is used in accordance with the instructions.
- You are advised to maintain this product in accordance with the operating instructions.

The product was designed for the following applications:
Use with the 743G20=1 hydronetic control unit. The hydronetic control unit allows you to precisely adjust the hydrostatic pressure within the hydronetic flex TT or TF system. This adjustable pressure ensures that the anatomy of the residual limb (including soft tissue, bone structures, scar tissue and any pressure or pain points) is accurately incorporated into the plaster cast under full load when the prosthetic socket is fitted.

Maximum permissible patient weight:
hydronetic flex TT: 150 kg
hydronetic flex TF: 150 kg

Intended place of use

- Orthopaedic workshop.

Intended fabrication process

- Fabrication of a plaster cast of the residual limb for the prosthetic socket.

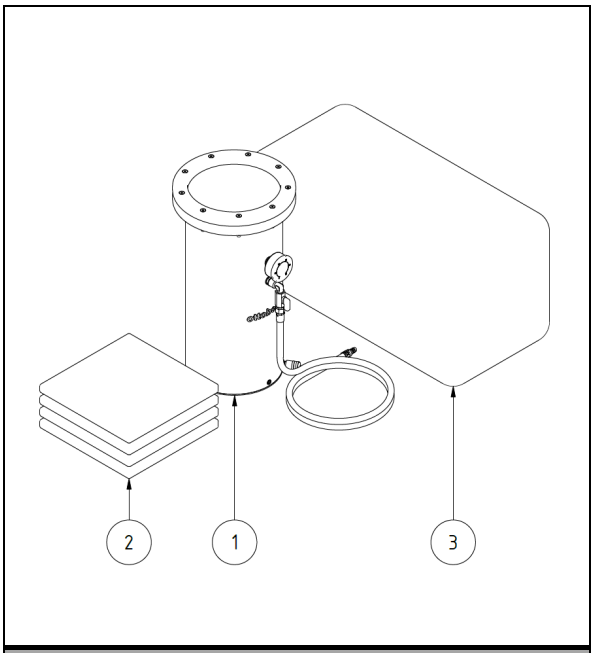
User training requirements

- Only for use by personnel with sufficient qualifications.
- Servicing and repairs may only be performed by service technicians authorised by Otto Bock Equipment B.V.
- For use by a **single person** at a time.

2.2 Improper use

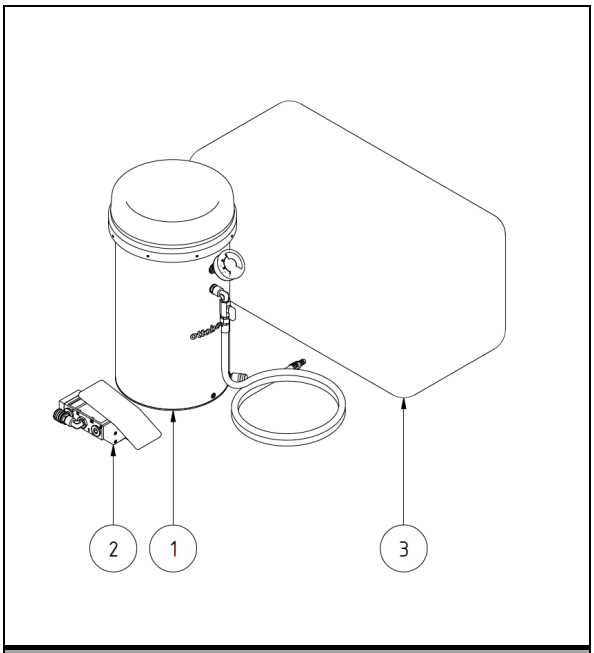
Improper use is any use that is not listed in the "**Intended use**" section.

2.3 Product overview



hydronetic flex TT

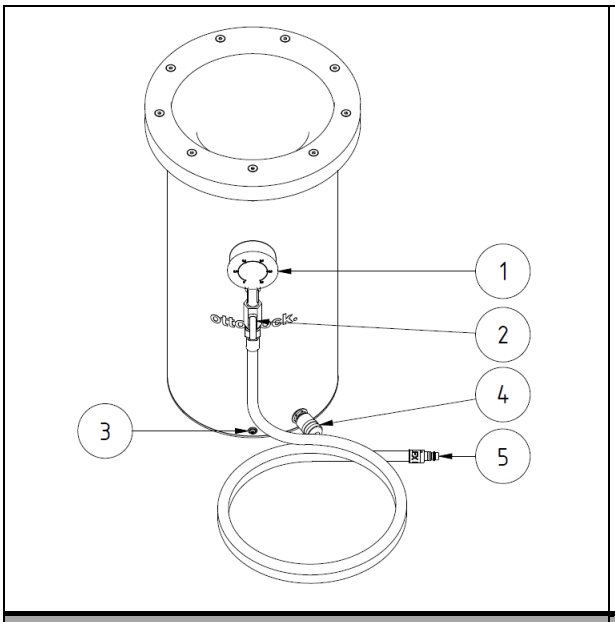
Product overview	
1	Flex TT system
2	Height compensation plates
3	Flex TT accessories



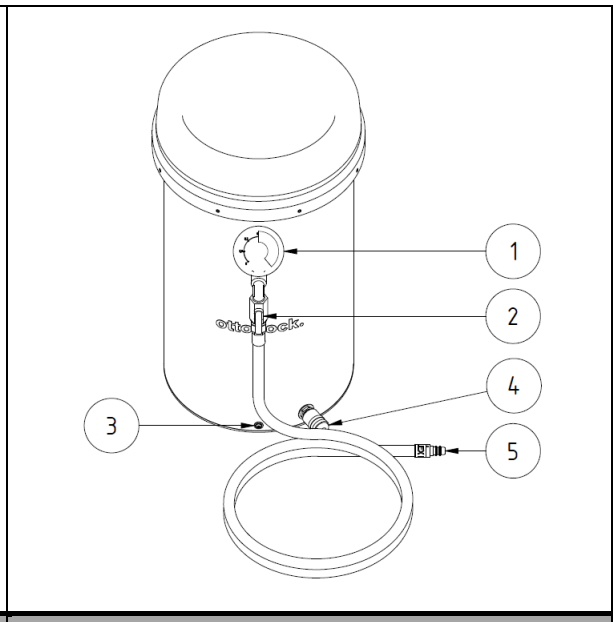
hydronetic flex TF

Product overview	
1	Flex TF system
2	Foot pedal for water intake
3	Flex TF accessories

2.4 Operating elements



hydronetic flex TT



hydronetic flex TF

Operating elements			
1	Pressure gauge for system pressure	4	Return run of hydronetic flex system
2	Ball valve	5	Water intake - TT: Starting from hydronetic control unit - TF: Starting from foot pedal
3	Vent screw	-	-

3. Transport

WARNING

Never walk or stand underneath suspended loads.

This careless behaviour may lead to death or serious injuries.

- Ensure that no persons are located near suspended loads during transport.

WARNING

A number of precautions must be taken to ensure safety during transport:

- Wear safety shoes.
- Only allow qualified personnel to assist.
- Transport the product only in the original packaging.

ATTENTION

- Protect the product from moisture and extreme temperature fluctuations.
- To avoid contamination during transport, leave the product in the original packaging or cover it with protective film.

4. Storage

ATTENTION

- For information about storage, see the "**Technical data**" section.
- Protect the product from moisture and extreme temperature fluctuations.
- To avoid contamination during storage, leave the product in the original packaging or cover it with protective film.

5. Unpacking

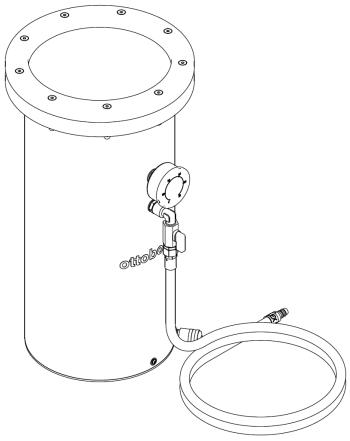
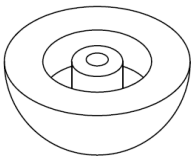
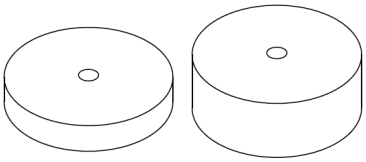
When unpacking, a number of precautions must be taken to ensure safety:

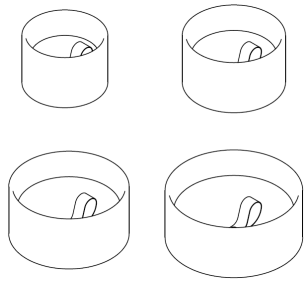
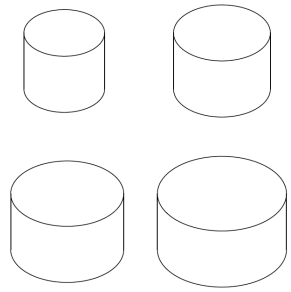
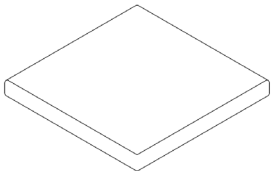
- Wear safety shoes.
- Only allow qualified personnel to assist.

- Check that the delivery is complete.

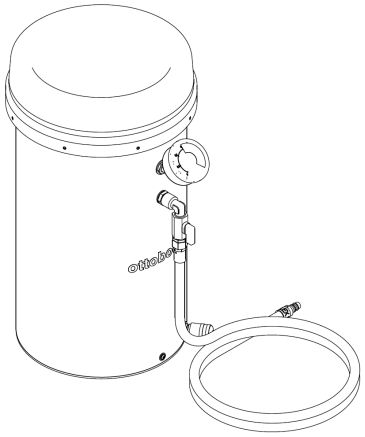
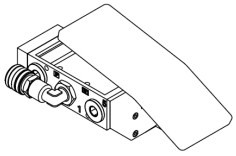
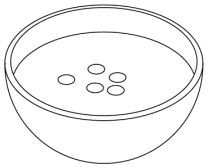
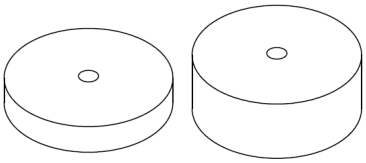
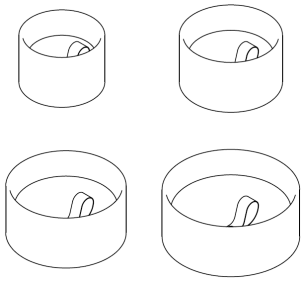
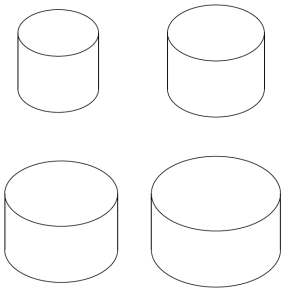
5.1 Checking the delivered items

The following products are included in the scope of delivery for the hydronetic flex TT:

Product contents			
#	Description	Article number	Image
1x	hydronetic flex TT	-	
1x	Distal end sphere	-	
1x	Set of height adjustment discs - 4x: 6 cm high - 2x: 3 cm high	-	

Product contents			
1x	Set for distal receiver: ▶ 1x: 10 cm diameter ▶ 1x: 12 cm diameter ▶ 1x: 14 cm diameter ▶ 1x: 16 cm diameter		
1x	Set of distal padding: ▶ 1x: 10 cm diameter ▶ 1x: 12 cm diameter ▶ 1x: 14 cm diameter ▶ 1x: 16 cm diameter	-	
4x	Height compensation plates	-	

The following products are included in the scope of delivery for the hydronetic flex TF:

Product contents			
#	Description	Article number	Image
1x	hydronetic flex TF	-	
1x	Foot pedal		
1x	Distal end sphere	-	
1x	Set of height adjustment discs - 4x: 6 cm high - 2x: 3 cm high	-	
1x	Set for distal receiver: ▶ 1x: 10 cm diameter ▶ 1x: 12 cm diameter ▶ 1x: 14 cm diameter ▶ 1x: 16 cm diameter		
1x	Set of distal padding: ▶ 1x: 10 cm diameter ▶ 1x: 12 cm diameter ▶ 1x: 14 cm diameter ▶ 1x: 16 cm diameter	-	

6. Connecting the product

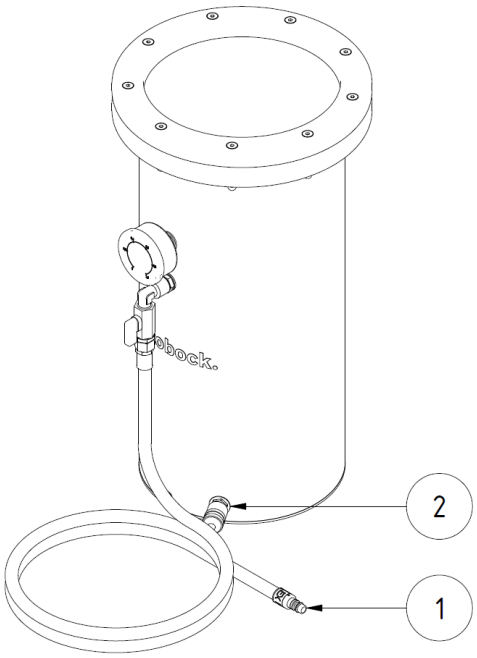
	Safety measures, including the following, must be taken during use: ▶ Qualified personnel. ▶ Tidy workplace: Keep the floor dry and clean. ▶ Use only cold water.

This chapter describes the connection of the hydronetic flex system. It is assumed that the hydronetic control unit is already connected. The hoses mentioned are included in the scope of delivery of the hydronetic control unit.

Since the hydronetic flex systems are mobile, the following steps must be repeated with changing setups.

6.1 hydronetic flex TT

Connect the hoses to the hydronetic control unit as specified:

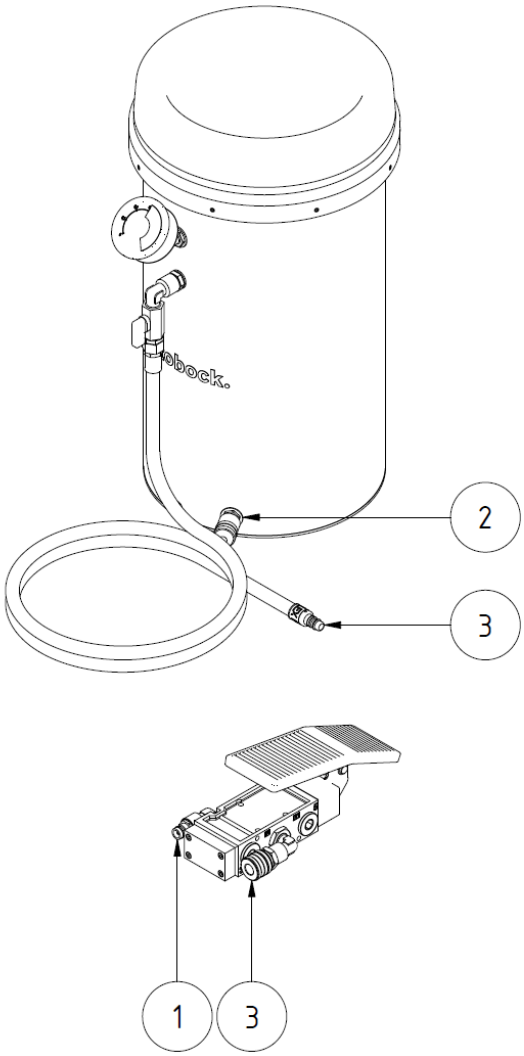


Connections			
1	FLEX hose: Flex system	2	Hose 2: Number 2

6.2 hydronetic flex TF

With the hydronetic flex TF, the water intake line runs from the tap via the corresponding foot pedal of this system directly to the cylinder. Connections 1 and 4 of the hydronetic control unit are not used.

Connect the hoses as shown:

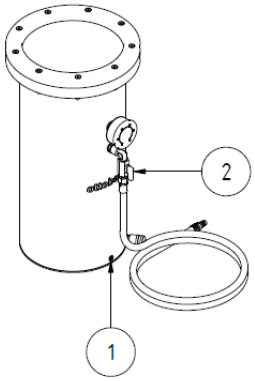


Connections			
1	Hose 1: Water intake line from the tap	3	FLEX hose: Foot pedal
2	Hose 2: Number 2	-	-

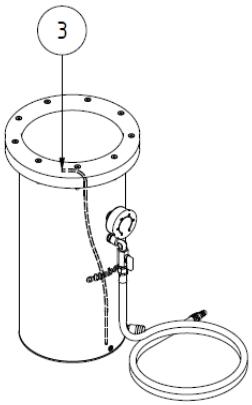
6.3 Venting

After connecting, the hydronetic flex system must be vented. The procedures described are based on the hydronetic flex TT and also apply to the hydronetic flex TF.

1. Screw on the vent screw (item 1).
2. Open the ball valve (item 2).



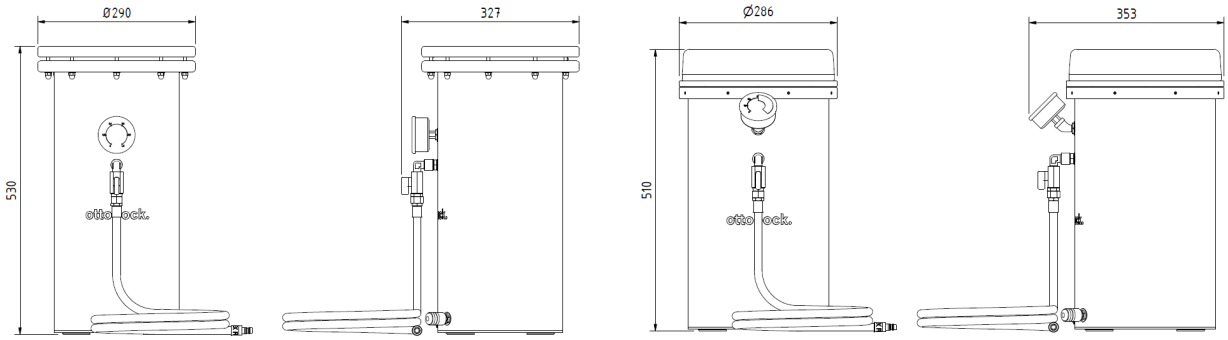
3. Open the tap: Use only cold water.
4. Start filling the cylinder by pressing the "+" button on the hydronetic control unit. Slowly refill to avoid air pockets.
5. Tilt the hydronetic flex slightly so that the opening of the vent hose (item 3) is in the highest position. The opening of the vent hose is visible from above through the membrane.



6. Fill until water exits the vent without air bubbles. This indicates that the cylinder is fully vented.
7. Close the vent screw and ball valve (item 1 and item 2).

7. Technical data

Name:	hydronetic flex TT		hydronetic flex TF	
Type:	743G16=1		743G16=2	
Year of manufacture:	See nameplate			
Weight:	10 kg		10 kg	
Dimensions:				
Width:	290	mm	286	mm
Depth:	327	mm	353	mm
Height:	530	mm	510	mm



Surface treatment:	Bead-blasted stainless steel
Installation details:	Environmental conditions 5 °C to 40 °C

8. Use

This chapter describes the daily use of the hydronetic flex system. The product is only suitable for the purposes described in the section **"Intended use"**.

	Safety measures, including the following, must be taken during use: ▶ Personnel trained for using the product. ▶ Do not leave the patient alone while making the plaster cast. ▶ Provide sufficient support for the patient. ▶ Make sure the device is in a stable position. ▶ Tidy workplace: Keep the floor dry and clean. ▶ Do not use near or with electrical connections and/or devices. ▶ Use only cold water. ▶ Check the condition of the membrane before use. ▶ Generously grease the membrane before each use. ▶ Clean the membrane after each use. ▶ Do not use cleaning agents or items for cleaning, only a soft cloth. ▶ Check hoses for leaks before use. ▶ Close water intake after use. ▶ Disconnect hoses after use.

For information on connecting the hydronetic flex system to the hydronetic control unit, refer to the section **"Connecting the Product"**.

8.1 Required materials

To take a good plaster cast, the following is required:

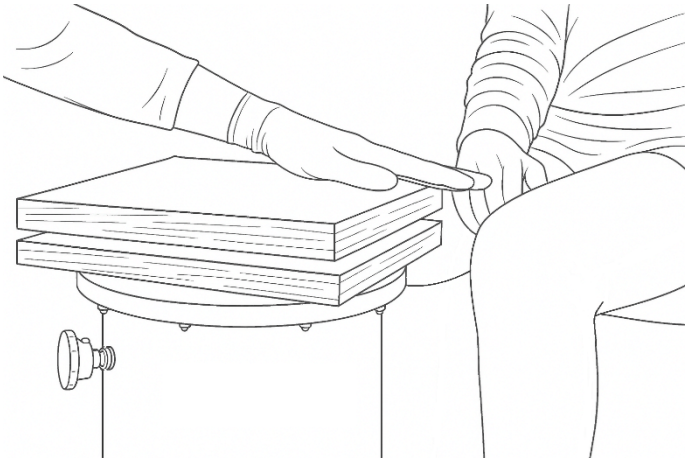
- Cold water
- Stretch film 642F18
- Nylon stockinette
- Plaster bandages (fast-curing)
- Film bag 642T6=*
- Plaster insulating grease 633F103=
- Disposable gloves 641H17=*

8.2 Adjusting the system height

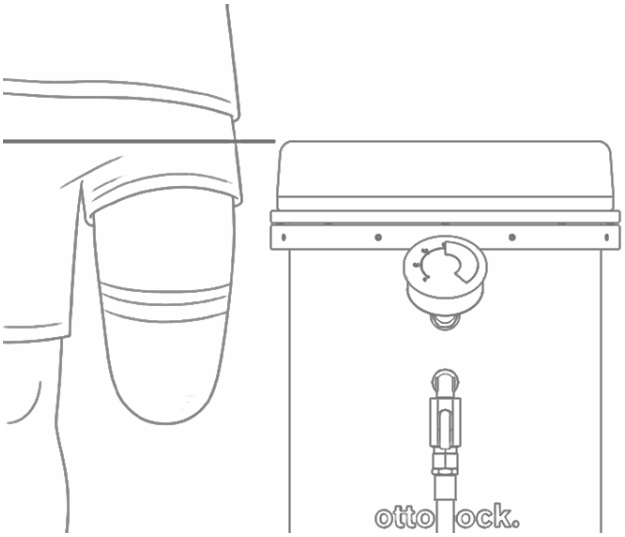
Check the condition of the membrane before use. It must be undamaged.

Make sure that the patient and cylinder are standing in a stable position. If necessary, use suitable devices to provide additional support for the patient. Place the system on a level, non-slip floor.

TT: Adjust the system so that the upper edge is aligned with the top of the thigh when the patient is seated. Use the supplied height compensation plates if necessary.



TF: Position the system so that it reaches its maximum height and the posterior holder is closely connected to the gluteal tuberosity (buttock bones). This positioning ensures stable support for the patient and guarantees an anatomically correct cast. For optimal height adjustment, the 703B3=1-1 hydronetic lifter can be used.



8.3 Assembling the vector tower

The **vector tower** consists of the distal end sphere, height compensation plates and the distal receiver with corresponding padding. During the measurement in the system, the patient is positioned on this vector tower.

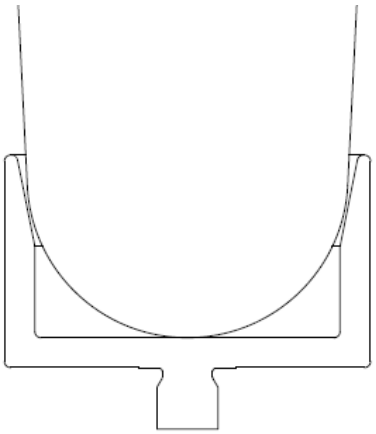
8.3.1 Distal receiver

Select the distal receiver and corresponding padding:

- If a liner is part of care, perform the selection with a liner.
- Start with the smallest distal receiver.

The residual limb must not touch the edge of the distal receiver, since this creates an edge in the plaster cast. If the selected distal receiver is too large, the free space between the residual limb and membrane will be too large, negatively affecting the accuracy of the cast.

The figure below shows a situation where the distal receiver is satisfactory, with the residual limb touching the bottom of the distal receiver without compression from the sides.



8.3.2 Distal padding

Select the distal padding according to the selected distal receiver. Check together with the patient to ensure they fit correctly.

8.3.3 Height of vector tower

Determine the height of the vector tower. Calculate the overall length of the height adjustment discs (D), rounded if applicable. Always start alignment with the distal end cap. In TF, the distal end cap is provided with several holes that enable eccentric alignment of the tower assembly.

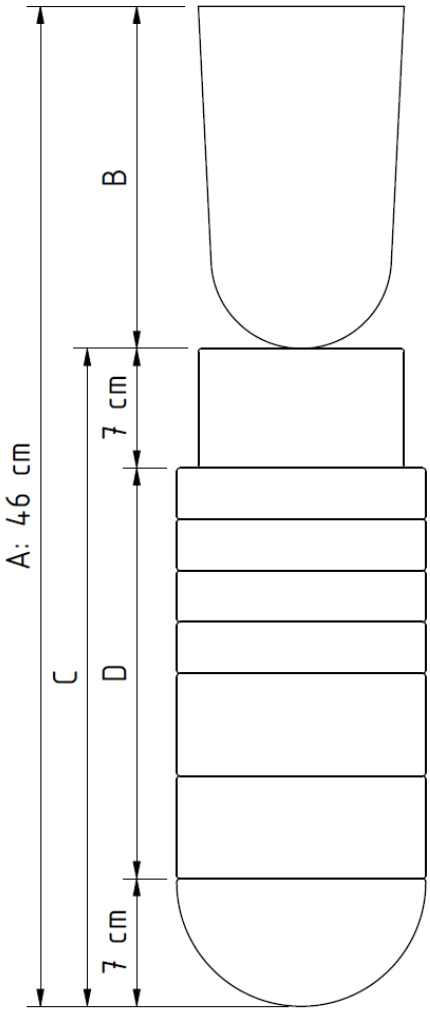
A: Overall height before calculation (46 cm).

B: Desired socket height: On the patient, measure the distance from the distal end of the residual limb to the desired socket height. As a rule of thumb:

- TT: 3 cm above the patella.
- TF: Up to the ramus.

C: Overall height of the tower.

D: 46 cm - B - 14 cm (the combined height of the distal end cap and distal receiver is 14 cm).



For example:

B = 22 cm

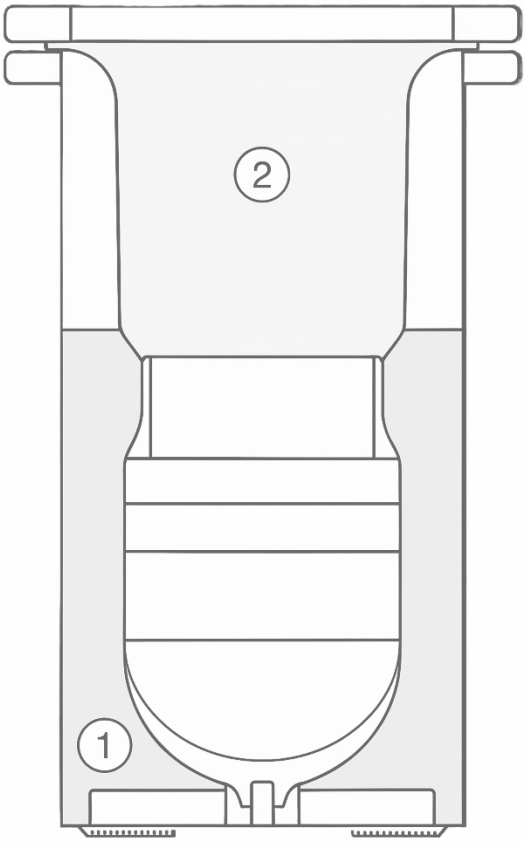
D = A - B - 14 cm

D = 46 cm - 22 cm - 14 cm = 10 cm

Number of compensation plates = 10 / 3 = 3 (rounded).

8.4 Greasing the membrane

Empty the system completely by pressing the reset button on the hydronetic control unit. Then insert the vector tower into the membrane with the distal end cap facing down. Fill the system up to the distal padding (item 1) so that the vector tower is fully enclosed by the membrane.
To prevent rubbing and sticking of the membrane, lubricate the membrane above the distal padding with plaster insulating grease (item 2).



8.5 Determining pressure

TT: Determine the pressure based on the following patient data:

1. Body weight of the patient in kg.
2. Sock circumference in mm: Without liner at the MPT (mid-pattellar-tendon) level.
3. Mobility grade: Grade 1 to 4
4. Residual limb tissue: hard (H), medium (M) or soft (S).

Determine the pressure in bar using the information in paragraphs 1 and 2 in accordance with the table below.

① kg / ② mm	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	150
280	0,41	0,48	0,55	0,62	0,69	0,76	0,83	0,9																
290	0,39	0,45	0,52	0,58	0,64	0,71	0,77	0,84	0,9															
300	0,36	0,42	0,48	0,54	0,6	0,66	0,72	0,7	0,84	0,9														
310	0,34	0,39	0,45	0,51	0,56	0,62	0,68	0,73	0,79	0,85	0,85													
320	0,32	0,37	0,42	0,48	0,53	0,58	0,64	0,69	0,74	0,79	0,85	0,9												
330	0,3	0,35	0,4	0,45	0,5	0,55	0,6	0,65	0,7	0,75	0,8	0,85	0,9	0,95										
340	0,28	0,33	0,38	0,42	0,47	0,52	0,56	0,61	0,66	0,7	0,75	0,8	0,84	0,89	0,94									
350	0,27	0,31	0,35	0,4	0,44	0,49	0,53	0,58	0,62	0,66	0,71	0,75	0,8	0,84	0,89	0,93								
360	0,25	0,29	0,33	0,38	0,42	0,46	0,5	0,54	0,59	0,63	0,67	0,71	0,75	0,79	0,84	0,88	0,92							
370		0,28	0,32	0,36	0,4	0,44	0,48	0,51	0,55	0,59	0,63	0,67	0,71	0,75	0,79	0,83	0,87	0,91						
380		0,26	0,3	0,34	0,38	0,41	0,45	0,49	0,53	0,56	0,6	0,64	0,68	0,71	0,75	0,79	0,83	0,86	0,9	0,94				
390			0,29	0,32	0,36	0,39	0,43	0,46	0,5	0,53	0,57	0,61	0,64	0,68	0,71	0,75	0,78	0,82	0,86	0,89	0,93			
400			0,27	0,3	0,34	0,37	0,41	0,44	0,47	0,51	0,54	0,58	0,61	0,64	0,68	0,71	0,75	0,78	0,81	0,85	0,88	0,91	0,95	
410			0,26	0,29	0,32	0,35	0,39	0,42	0,45	0,48	0,52	0,55	0,58	0,61	0,65	0,68	0,71	0,74	0,77	0,81	0,84	0,8	0,9	
420				0,28	0,31	0,34	0,37	0,4	0,43	0,46	0,49	0,52	0,55	0,58	0,61	0,65	0,68	0,71	0,74	0,77	0,8	0,83	0,86	0,92
430				0,26	0,29	0,32	0,35	0,38	0,41	0,44	0,47	0,5	0,53	0,56	0,59	0,62	0,65	0,67	0,7	0,73	0,76	0,79	0,82	0,88
440				0,25	0,28	0,31	0,34	0,36	0,39	0,42	0,45	0,48	0,5	0,53	0,56	0,59	0,62	0,64	0,67	0,7	0,73	0,76	0,78	0,84
450					0,27	0,29	0,32	0,35	0,37	0,4	0,43	0,46	0,48	0,51	0,54	0,56	0,59	0,62	0,64	0,67	0,7	0,72	0,75	0,8
460					0,26	0,28	0,31	0,33	0,36	0,38	0,41	0,44	0,46	0,49	0,51	0,54	0,56	0,59	0,61	0,64	0,67	0,69	0,72	0,7
470						0,27	0,29	0,32	0,34	0,37	0,39	0,42	0,44	0,47	0,49	0,52	0,54	0,56	0,59	0,61	0,64	0,66	0,69	0,74
480						0,26	0,28	0,31	0,33	0,35	0,38	0,4	0,42	0,45	0,47	0,49	0,52	0,54	0,56	0,59	0,61	0,64	0,66	0,7
490							0,27	0,2	0,32	0,34	0,36	0,38	0,41	0,43	0,45	0,47	0,5	0,52	0,54	0,56	0,59	0,61	0,63	0,68
500							0,26	0,28	0,3	0,33	0,35	0,37	0,39	0,41	0,43	0,46	0,48	0,5	0,52	0,54	0,56	0,59	0,6	0,65
510							0,25	0,27	0,29	0,31	0,33	0,35	0,38	0,4	0,42	0,44	0,46	0,48	0,5	0,52	0,54	0,56	0,58	0,63
520								0,26	0,28	0,3	0,32	0,34	0,36	0,38	0,4	0,42	0,44	0,46	0,48	0,5	0,52	0,54	0,56	0,6
530								0,25	0,27	0,29	0,29	0,33	0,35	0,37	0,39	0,41	0,42	0,44	0,46	0,48	0,5	0,52	0,54	0,58
540									0,26	0,28	0,3	0,32	0,33	0,35	0,37	0,39	0,41	0,43	0,45	0,46	0,48	0,5	0,52	0,56
550									0,25	0,27	0,29	0,3	0,32	0,34	0,36	0,38	0,39	0,41	0,43	0,45	0,47	0,48	0,5	0,54
560										0,26	0,28	0,29	0,31	0,33	0,35	0,36	0,38	0,4	0,41	0,4	0,45	0,47	0,48	0,52
570										0,25	0,27	0,28	0,3	0,32	0,33	0,35	0,37	0,38	0,4	0,42	0,43	0,45	0,47	0,5
580											0,26	0,27	0,29	0,31	0,32	0,34	0,35	0,37	0,39	0,4	0,42	0,44	0,45	0,48

Correct that pressure using the information set out in paragraphs 3 and 4 in accordance with the table below:

③		④	
1	-0,02 bar	H	- bar
2	- bar	M	0,02 bar
3	0,02 bar	S	0,04 bar
4	0,04 bar		

For example:

Patient data:

1. Patient weight: 90 kg
2. Residual limb circumference in mm: 360 mm
3. Mobility grade: 3
4. Residual limb tissue: M

Value from the table with the data from items 1 and 2:	0.75	bar
Value from the table with the data from item 3:	+ 0.02	bar
Value from the table with the data from item 4:	+ 0.02	bar
Total pressure:	**0.79**	**bar**

TF: The recommended pressure is between 230 and 260 mbar (hard connective tissue approx. 230 mbar, soft connective tissue approx. 260 mbar).

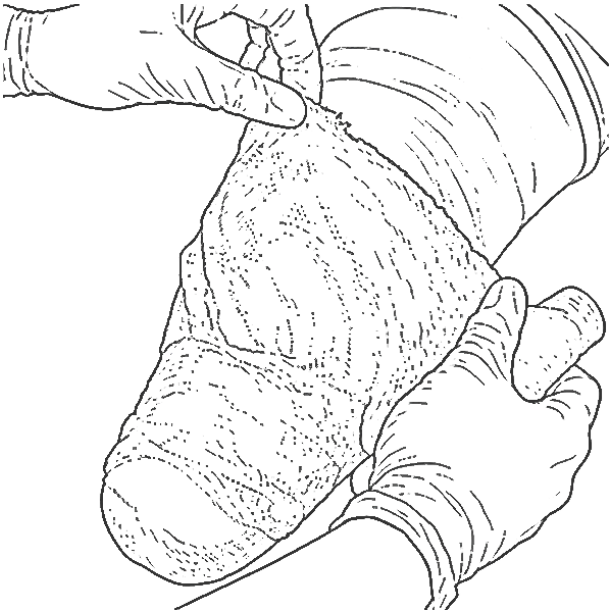
8.6 Plaster cast

If a liner is part of care, perform these steps with a liner.
For pin systems (shuttle lock), remove the pin to prevent damage to the membrane.

Protect the outside of the liner with a layer of stretch film. Mark the socket trim line and any problem areas.

It is advisable to pull a thin nylon tubing over the film to prevent the plaster bandages from forming air bubbles.

Wrap the residual limb with damp plaster bandages. Cover the entire residual limb and wrap it without tension, then smooth the plaster. Apply film over the fresh plaster to avoid contamination of the system.



Tip: Use cold water to prevent the plaster bandages from curing prematurely.

Make sure the patient can put weight on the residual limb during the entire printing process while standing, and provide some support.
The patient moves their residual limb upright in the centre of the system opening, so that slight contact is established with the distal padding.

Notice! Make sure the residual limb drops fully into the cylinder to the desired shaft height.

The system can now continue to be filled until the patient feels a slight pressure.

TT: Starting at approx. 400 mbar, have the patient put a full static load on their residual limb. The system is then filled to the final pressure, which was determined on the basis of the patient data. Keep the pressure constant while casting the plaster.

TF: The recommended pressure is between 230 and 260 mbar (hard connective tissue approx. 230 mbar, soft connective tissue approx. 260 mbar).

Notice! Patient comfort, the determined pressure is only a guideline!
Notice! Do not leave the patient alone while making the plaster cast!

The right pressure places a full and even load on the residual limb.

Wait for the curing time to elapse while the patient remains standing and bearing their full static weight.

Once the plaster has cured, the patient can reduce the load on the residual limb. Drain the water from the system by pressing the "–" button, then pump the remaining water out of the system by pressing the reset button.

NOTICE! To prevent the patient from sinking deeper into the distal end cushion, allow the patient to slowly pull the residual limb out of the system as the pressure decreases.

The plaster cast is ready!

8.7 System emptying and cleaning

Empty the system completely and remove the vector tower from the membrane.

NOTICE! Empty the system completely, do not pull on the vector tower to prevent damage to the membrane.

Remove any plaster residue and plaster insulating grease with a soft cloth.

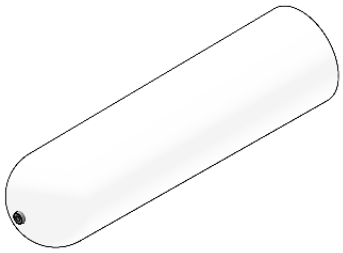
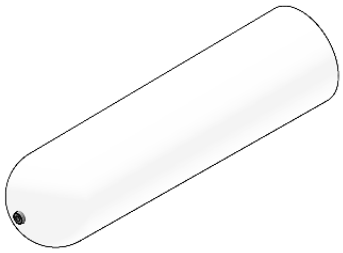
NOTICE! Do not use cleaning agents or items for cleaning, only a soft cloth.

9. Maintenance tasks on the product

Maintenance tasks on the products of Otto Bock Equipment B.V. must only be performed by the supplier or by an installer approved by the supplier. When opening the housing, make sure that all hoses of the hydronetic control unit are disconnected.

	▶ The user may be placed in danger by incorrect use of the product or by repairs performed by unauthorised personnel. ▶ Only use original spare parts. ▶ Otto Bock Equipment B.V. accepts no liability whatsoever in case of improper use or if non-original spare parts are used.

10. Component list

Image	Article number	Product description
	743Y958=1	hydronetic membrane TT
	743Y958=2	hydronetic membrane TT

11. Malfunctions and maintenance

11.1 Malfunctions

If faults occur, please contact your supplier. Ensure that you have the following information at hand: serial number, year of manufacture and model. This information can be found on the nameplate – see the section "**Field of application for this document**".

11.2 Maintenance

As a precaution, replace the membrane of the hydronetic flex system annually. In case of damage, replace the membrane immediately. The article number of the membrane concerned is listed in the chapter "Component list".

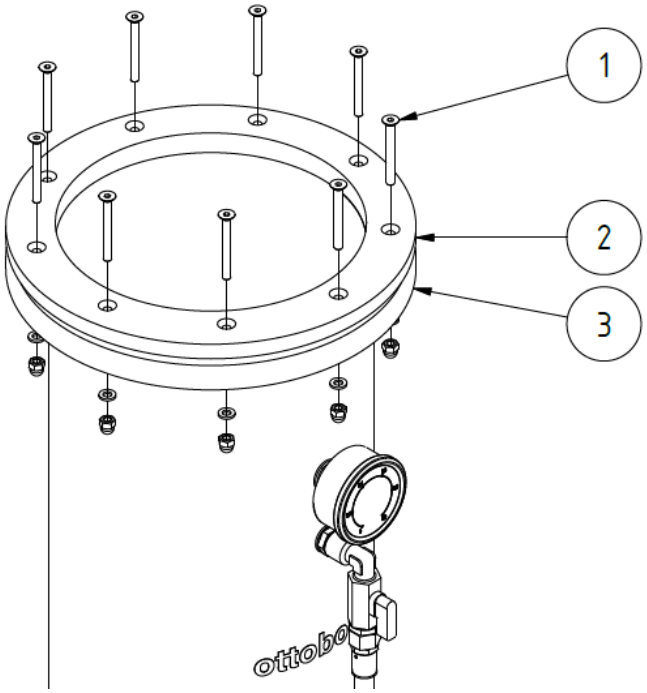
In addition, it is important to keep the system clean. Ensure the hydronetic flex system is kept dry and dust-free after use or when stored.

11.2.1 Replacing the membrane of the Flex TT

1. Empty the system completely before replacing the membrane.

2. Remove the clamping rings:
   - Loosen the nine screws with lock ring and nut (item 1).
   - Remove the upper clamping rings (item 2).
   - Allow the lower clamping rings (item 3) to drop down.

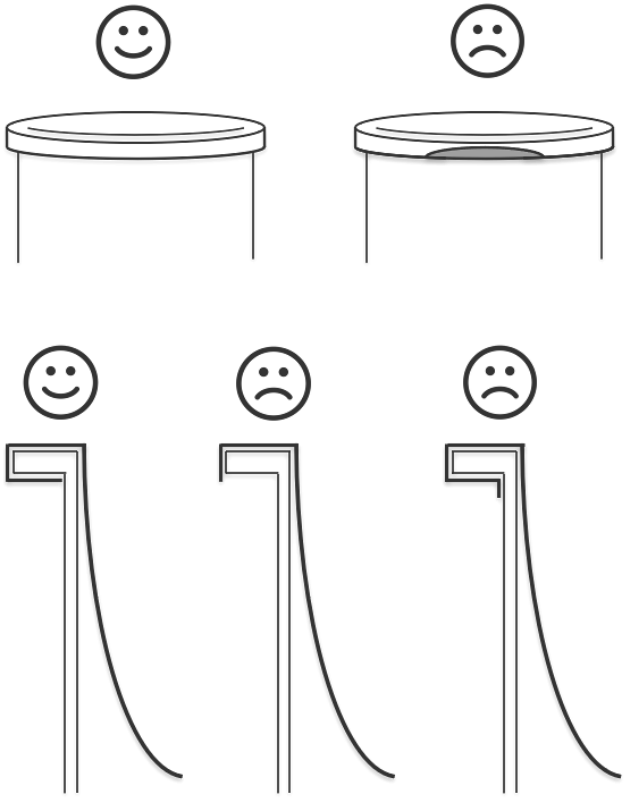
     NOTICE! The clamping rings and the membrane are not glued, but may be held in place by clamping force.



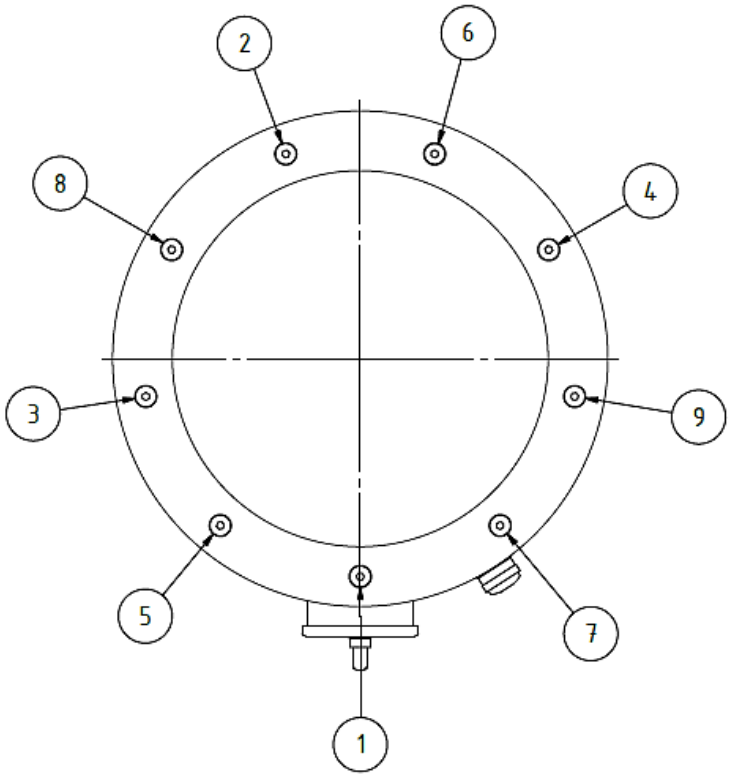
3. Remove the membrane:
   - Loosen the membrane at the top edge.
   - Remove the membrane on the underside of the cylinder by turning it clockwise.
   - Take the membrane out of the cylinder.

4. Clean the cylinder:
   - Clean the inside with water and a neutral detergent if necessary.
   - Use a cloth.

5. Insert the new membrane:
    - Insert the membrane into the cylinder and turn it to the right from below until a slight resistance is felt.
    - Then pull the top of the membrane evenly over the edge of the cylinder.
    - Make sure that the membrane is completely and tightly fitted around the upper edge and lies flat against the outside of the cylinder.



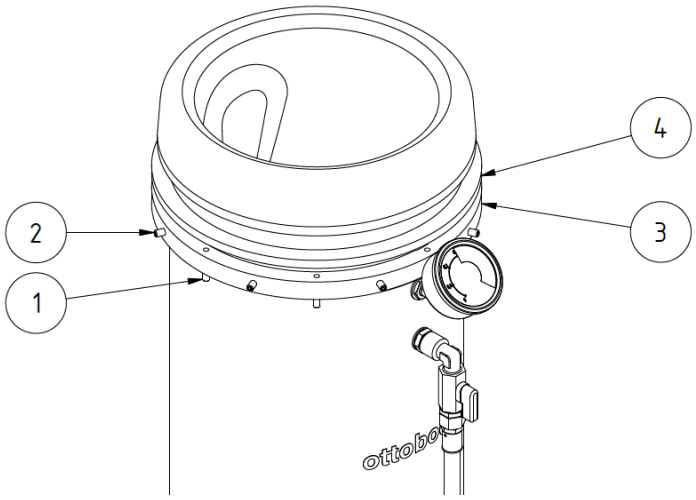
6. Install the clamping rings:
    - Push the lower clamping ring upwards against the edge of the membrane (make sure that the membrane does not slip).
    - Insert the upper clamping ring so that the recessed holes face up.
    - Tighten the clamping rings by hand with the screws and corresponding lock rings and nuts.
    - Then tighten the screws crosswise to a torque of 4 Nm.



11.2.1 Replacing the Flex TF membrane

1. Empty the system completely before replacing the membrane.

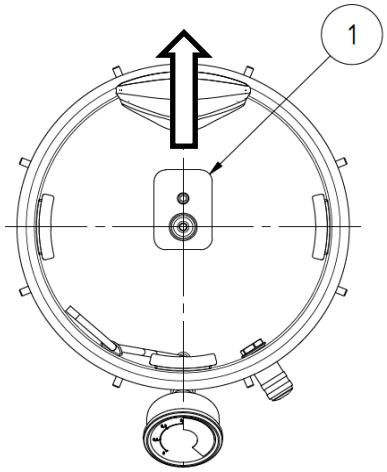
2. Remove the clamping rings:
   - Loosen the eight vertical screws (item1) in the lower clamping ring (item 3) by a few turns.
   - Then loosen the eight horizontal screws (item 2) in the lower clamping ring by a few turns.
   - Lower both the lower and upper clamping ring (item 4) downwards.
     NOTICE! The upper clamping ring and the membrane are not glued, but may be held in place by clamping force.



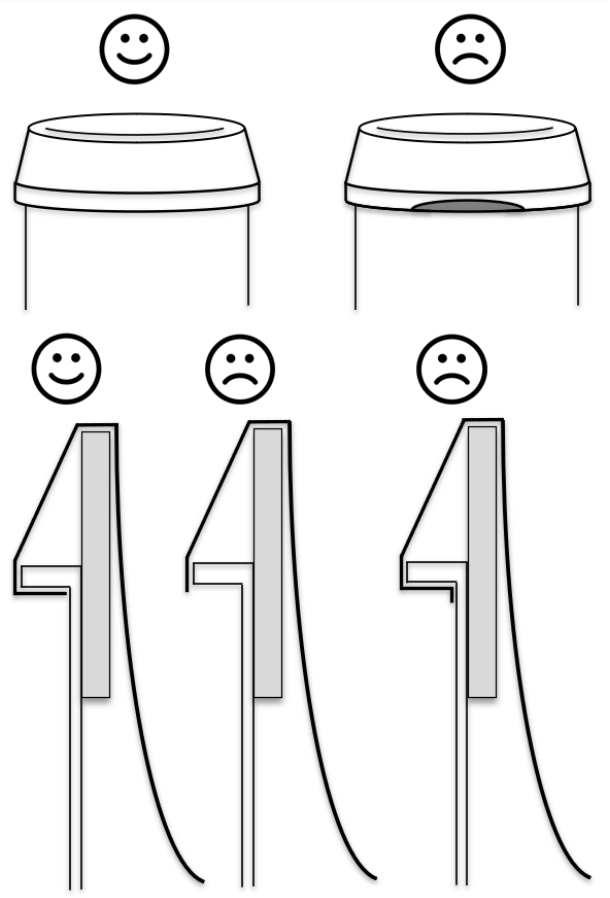
3. Remove the membrane:
   - Loosen the membrane at the top edge.
   - Remove the membrane on the underside of the cylinder by turning it clockwise.
   - Take the membrane out of the cylinder.

4. Clean the cylinder:
   - Clean the inside with water and a neutral detergent if necessary.
   - Use a cloth.

7. Check the alignment of the membrane offset plate (item 1) on the bottom of the cylinder; it must point towards the rear.



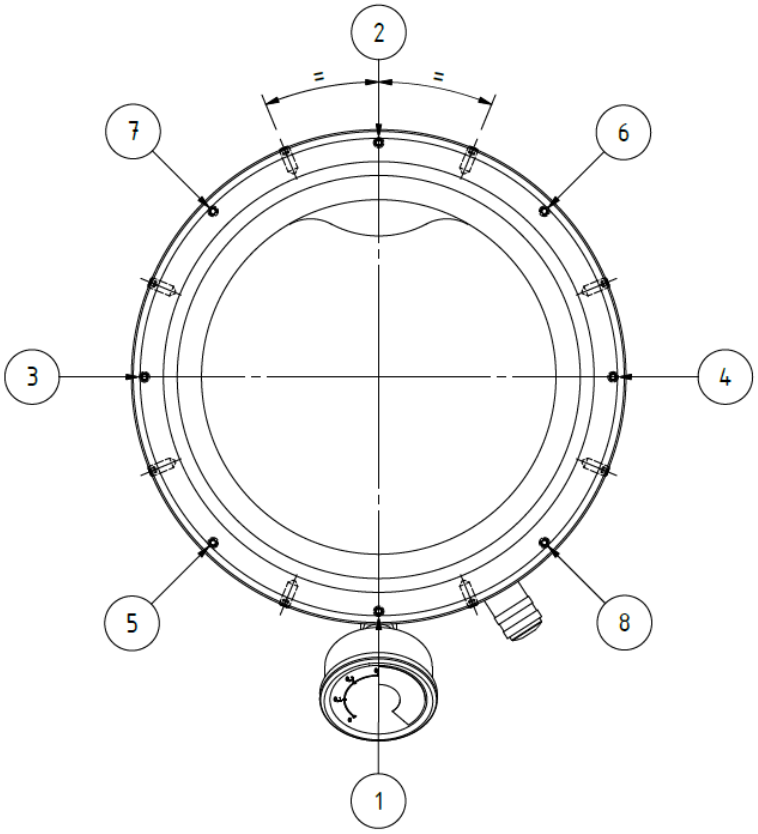
8. Insert the new membrane:
   - Insert the membrane into the cylinder and turn it to the right from below until a slight resistance is felt.
   - Then pull the top of the membrane evenly over the edge of the cylinder.
   - Make sure that the membrane is completely and tightly fitted around the upper edge and lies flat against the outside of the cylinder.



9. Install the clamping rings:
    - Push the upper and lower clamping ring upwards against the edge of the membrane (make sure that the membrane does not slip).
    - Tighten the eight horizontal screws in the lower clamping ring by hand all the way round and then tighten to a torque of 5 Nm.
    - Also tighten the eight vertical screws in the lower clamping ring by hand all the way round and then tighten crosswise to a torque of 4 Nm.

      NOTICE! Make sure the vertical screws are centred between the horizontal screws.

      NOTICE! The space between the two clamping rings must be parallel to each other (final space approx. 3 mm).



12. Pictograms used

The subsections that follow list the symbols and pictograms that may be used in this document as well as their meaning.

12.1 Warning symbols

	Warning of general danger

	Slip hazard warning

12.2 Mandatory symbols

	General mandatory symbols

	Read the operating instructions carefully

	Safety shoes required

12.3 Prohibition symbols

	Never walk or stand underneath suspended loads.

12.4 Pictograms for transport and storage

	This side up for transport and storage

	Protect against soiling

Notes

Notes

Notes

ottobock.

Manufacturer and supplier:
Ottobock Equipment B.V.
Industriepark "het Hoog"
Mandenmaker 14
5253RC Nieuwkuijk, Netherlands
www.pe.ottobock.com

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